



UNITED STATES PATENT AND TRADEMARK OFFICE

Elm
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,293	07/08/2003	Jong-Weon Moon	8733.903.00-US	7386
30827	7590	10/31/2006	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			CALEY, MICHAEL H	
		ART UNIT	PAPER NUMBER	
			2871	

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/614,293	MOON, JONG-WEON	
	Examiner	Art Unit	
	Michael H. Caley	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 09 August 2006.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
 - 4a) Of the above claim(s) 12-20 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-11 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08 July 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/9/06 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon (U.S. Patent Application Publication 2001/0026335 “Moon ‘335” in view of Moon et al. (KR 2001-0111863 “Moon ‘863”).

Regarding claim 1, Moon ‘335 discloses a liquid crystal display having:

first and second substrates (Figure 5 elements 550 and 500) facing and spaced apart from each other;

a retardation layer (Figure 5 element 552) on an outer surface of the first substrate;

a linear polarizing layer (Figure 5 element 554) on the retardation layer;
a cholesteric liquid crystal color filter (Figure 5 element 200) layer on an inner
surface of the second substrate and having a first helical pitch of a first circular
polarization direction (Page 1 [0014]);
a first cholesteric liquid crystal polarizing layer (Figure 5 element 150) on an
outer surface of the second substrate and having a first helical pitch of a first circular
polarization direction (Page 4 [0052]), wherein the CCF layer has the same circular
polarization direction as the first circular polarization direction; and
a backlight unit outside the second CLC polarizing layer (Figure 5 element 50).

Moon '335 fails to disclose a second CLC polarizing layer on the first CLC polarizing
layer having a second helical pitch of a second circular polarization direction opposite to the first
circular polarization direction. Moon '863, however teaches a combination of first and second
CLC polarizers adjacent to one another having opposite helical pitch directions (Figure 3
elements 12 and 13a; Column 5 line 9 – Column 6 line 10) in addition to a cholesteric color filter
(Figure 3 element 15).

It would have been obvious to one of ordinary skill in the art at the time the invention
was made to have configured the display device disclosed by Moon '335 to have first and second
CLC polarizing layers having pitch directions of opposite directions according to the teachings
of Moon '863. One would have been motivated to form an additional CLC polarizing layer
according to the teachings of Moon '863 to efficiently make use of the light from the light source
by repetitively reflecting the light between the CLC layers and the reflecting plate and so that it

may exit the CLC color filter in a specific visible light band (Column 5 line 54 – Column 6 line 5). Such an improvement is taught by Moon ‘863 to improve the efficiency of the light source and the color purity of the display (Column 2 lines 3-30).

The examiner notes that U.S. Patent No. 6,597,418 to Moon et al. is used as an English version of the Korean document.

Regarding claims 2-7, Moon ‘335 fails to disclose the first and second CLC polarizers having the proposed properties. Moon ‘863, however, teaches one CLC polarizing layer as having a discrete pitch (element 13a) and one CLC polarizing layer having a continuous pitch (element 12). Moon ‘863 teaches the discrete helical pitch as corresponding to bands of wavelengths adjacent to red, green and blue colors (Column 5 lines 29-31, 54-65) and the second helical pitch as corresponding to a broadband of wavelength (Column 5 lines 23-65). Moon ‘863 further teaches the CCF layer as having a third helical pitch in the same direction of the discrete pitch corresponding to wavelengths of red, green and blue colors (Column 5 line 54 – Column 6 line 11) and each of the cholesteric layers as having one of a right-handed and left-handed polarization direction (Column 5 lines 23-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have configured the display device disclosed by Moon ‘335 to have first and second CLC polarizing layers having pitch directions as proposed. One would have been motivated to form an additional CLC polarizing layer according to the teachings of Moon ‘863 to efficiently make use of the light from the light source by repetitively reflecting the light between the CLC layers and the reflecting plate and so that it may exit the CLC color filter in a specific visible

light band (Column 5 line 54 – Column 6 line 5). Such an improvement is taught by Moon ‘863 to improve the efficiency of the light source and the color purity of the display (Column 2 lines 3-30).

Regarding claim 11, Moon ‘335 discloses the retardation layer as a quarter wave plate (Page 4 [0051]).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon ‘335 in view of Moon ‘863 and in further view of Honda et al. (U.S. Patent No. 2002/0012085 “Honda”).

Moon ‘335 as modified by Moon ‘863 fails to disclose a diffusing layer between the first substrate and the retardation layer and a compensation layer between the retardation layer and the linear polarizer. Honda, however, teaches such a diffusing layer as an improved method of scattering light in a transflective display (Page 1 [0004]-[0006]); Figure 9 element 11). Furthermore, Honda teaches a compensation layer of viewing angle (22) between the retardation layer (23) and the linear polarizer (21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a diffusing layer and compensation layer of viewing angle as proposed in the display device disclosed by Moon ‘335. One would have been motivated to construct the display device with such a diffusing layer and compensation layer as a means of maintaining uniform viewing characteristics such as color and brightness across a range of viewing angles (Page 1 [0006]-[0009]).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moon '335 in view of Moon '863 and in further view of Arakawa et al. (U.S. Patent Application Publication No. 2002/0036735 "Arakawa").

Moon '335 as modified by Moon '863 fails to disclose the backlight unit as emitting light of a spectrum having peaks at wavelength bands corresponding to red, green, and blue colors. Arakawa, however, teaches such a light source used in combination with a cholesteric liquid crystal polarization layer in a liquid crystal display (Page 2 [0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a backlight having an emission characteristic as proposed. One would have been motivated to use such a backlight having an emission spectrum with peaks at red, green, and blue so that a higher percentage of the light may be transmitted through one of the color filters to increase the efficiency of the display according to conventional methods.

Response to Arguments

Applicant's arguments filed 8/9/06 have been fully considered but they are not persuasive.

Applicant argues that Moon '335 and Moon '863 fail to teach the limitation "wherein the CCF layer has the same circular polarization direction as the first circular polarization direction". Applicant directs attention to the left-handed helical pitch of the red color filter of Moon '335 with respect to green and blue light (see Remarks, bottom page 5) to reach the conclusion that the red color filter (200) polarization direction is not in the same direction as the polarization

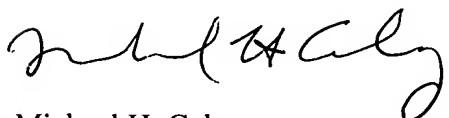
direction of layer 150. When the red color filter 200 is analyzed with respect to red light, however, it is apparent that this CCF layer (200) has the same circular polarization direction as the first cholesteric liquid crystal polarizing layer (150) as they both transmit red left-handed circularly polarized light. Therefore, Applicant's contention that the layer 200 does not have a same polarization direction as layer 150 is only true when ignoring the helical pitch affecting the red light. The examiner maintains that the helical pitch in the CCF layer and the polarizing layer affecting red light is the same and therefore maintains that Moon '335 discloses the claim limitation "wherein the CCF layer has the same circular polarization direction as the first circular polarization direction".

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael H. Caley
October 19, 2006